We claim:

1. A method of training an object visual inspection system, the method comprising:

specifying an alignment region;

associating the alignment region with a plurality of inspection regions;

associating each of the plurality of inspection regions with at least one inspection tool; and

performing training for each of the plurality of inspection regions for each of the associated inspection tools.

2. The method of claim 1, wherein performing training for the at least one inspection tool requires performing statistical training with reference to a plurality of training images.

3. The method of claim 1, wherein training for each of the plurality of inspection regions is performed in any order.

4. The method of claim 1, wherein associating each of the plurality of inspection regions with at least one inspection tool associates at least one of the plurality of inspection regions with a first inspection tool that is different from a second inspection tool associated with another one of the plurality of inspection regions.

5. The method of claim 4, wherein training for the first inspection tool is performed simultaneously with training for the second inspection tool.

6. The method of claim 4, wherein training for the first inspection tool is performed either before or after training for the second inspection tool.

7. A method of performing inspection using an object visual inspection system, the method comprising:

aligning run-time image-data with trained image-data using a specified alignment region;

identifying a plurality of inspection regions within the run-time image-data based on the specified alignment region; and

performing inspection of at least one of the plurality of inspection regions using at least one inspection tool associated with the at least one inspection region.

8. The method of claim 7, wherein performing inspection of the at least one inspection region is performed based on trained image-data produced during a training mode in which an alignment region is specified an associated with the plurality of inspection regions, which are each associated with at least one inspection tool, and training is performed for the inspection tools associated with the plurality of inspection regions.

9. The method of claim 7, wherein inspection of each of the plurality of inspection regions is performed in any order.

10. The method of claim 7, wherein at least one of the plurality of inspection regions is associated with a first inspection tool that is different from a second inspection tool associated with another one of the plurality of inspection regions.

11. The method of claim 10, wherein inspection using the first inspection tool is performed simultaneously with training for the second inspection tool.

12. The method of claim 10, wherein inspection using the first inspection tool is performed either before or after training for the second inspection tool.

13. A visual inspection system comprising:

a machine vision system coupled to a camera, the machine vision system including:

a display that displays the acquired image-data;

a processor coupled to the display via a bus;

a memory buffer coupled to the display and the processor via the bus;

a visual data acquisition system interface coupled to the display, processor and memory buffer via the bus and to the camera;

a user interface coupled to the display, processor, memory buffer and visual data acquisition system via the bus;

a controller coupled to and controlling cooperation of the display, the processor, the memory buffer, the visual data acquisition system interface and the user interface via the bus,

wherein, under the direction of the controller, the processor fetches instructions from the memory buffer that direct the controller to control the visual data acquisition system interface, user interface and processor to specify an alignment region, associate the alignment region with a plurality of inspection regions, associate each of the plurality of inspection regions with at least one inspection tool, and perform training for each of the plurality of inspection regions for each of the associated inspection tools.

14. A visual inspection system comprising:

a camera that acquires image-data including a digital representation of objects; and

the machine vision system as recited in claim 13 coupled to the camera.

15. The machine vision system of claim 13, wherein the controller controls the processor to perform training for the at least one inspection tool by performing statistical training with reference to a plurality of training images based on instructions stored in the memory buffer.

16. The machine vision system of claim 13, wherein the controller controls the processor to associate each of the plurality of inspection regions with at least one inspection tool to associate at least one of the plurality of inspection regions with a first inspection tool

that is different from a second inspection tool associated with another one of the plurality of inspection regions.

17. The machine vision system of claim 16, wherein the controller controls the processor to perform training for the first inspection tool simultaneously with training for the second inspection tool.

18. The machine vision system of claim 13, wherein, based on the instructions stored in the memory buffer, the controller controls the processor to align run-time image-data with trained-image-data using a specified alignment region, identify a plurality of inspection regions within the run-time image-data based on the specified alignment region, and perform inspection of at least one of the plurality of inspection regions using at least one inspection tool associated with the at least one inspection region.

19. The machine vision system of claim 13, wherein the controller controls the processor to perform inspection of the at least one inspection region based on trained image-data produced during a training mode in which an alignment region is specified and associated with the plurality of inspection regions, which are each associated with at least one inspection tool, and training is performed for the inspection tools associated with the plurality of inspection regions.

20. The machine vision system of claim 19, wherein the trained image-data includes template image-data.

21. The machine vision system of claim 19, wherein the trained image-data includes standard deviation image-data.

22. The machine vision system of claim 19, wherein the trained image-data is produced by statistical training.

23. The machine vision system of claim 13, wherein the at least one inspection tool is one of an intensity difference inspection tool, feature difference inspection tool or blank scene inspection tool.